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The Pliocene and Pleistocene Insectivores *(Mammalia)* of Poland. II. *Soricidae: Paranourosorex* and *Amblycoptus*

[Pp. 167—184, 5 text-figures]

Owadożerne *(Mammalia)* pliocenu i plejstocenu Polski. II. *Soricidae: Paranourosorex* i *Amblycoptus*

Насекомоядные *(Mammalia)* плиоцена и плейстоцена Польши. II. *Soricidae: Paranourosorex* и *Amblycoptus*

Abstract. A description of a new form, *Paranourosorex gigas* n. g. n. sp. (*Soricinae, Neomyini*), from the Middle-Pliocene fossil locality of Podlesice in Poland is given. A mandibular fragment determined as belonging to *Amblycoptus* cf. *topali* JÁNOSSY, 1972 from the probably Upper Villafranchian fauna of Zamkowa Dolna Cave at Olsztyn is described. Measurements and drawing of the remains found are given and their systematic position is discussed.

INTRODUCTION

The present paper is the second part of an intended description of the remains of *Insectivora* from the Pliocene and Pleistocene of Poland. The previous paper (RZEBIK-KOWALSKA, 1971) was devoted to the *Erinaceidae* and *Desmaninae*, the present one is the first part of the study of the *Soricidae*. It deals with two closely related forms belonging to the tribe *Neomyini* of the subfamily *Soricinae*: *Paranourosorex gigas* n. g. n. sp. from Podlesice near Kroczyce and *Amblycoptus* cf. *topali* JÁNOSSY, 1972 from Zamkowa Dolna Cave at Olsztyn near Częstochowa.

The data about the fossil fauna from Podlesice, which is dated to the Middle Pliocene (KOWALSKI, 1963), are to be found in the papers by KOWALSKI (1956) and RZEBIK-KOWALSKA (1971). According to BERGGREN and VAN COUVERING (1974) Podlesice belongs to the uppermost Miocene. Zamkowa Dolna Cave, situated at Olsztyn near Częstochowa, contained a rich fauna of small mammals, hitherto undescribed, in layer C of its sediments. According to K. KOWALSKI (personal com-

munication), it is slightly younger than the Middle-Villafranchian fauna from Rębielice Królewskie I. Among rodents it contained *Eomyidae*, *Muridae*, *Cricetidae*, *Spalacidae* as well as the genera *Baranomys*, *Glirulus*, *Glis*, *Muscardinus*, *Sciurus*, *Pliopetaurista* and *Citellus*. Voles, with *Mimomys*, *Pliomys*, *Ungaromys*, *Villanyia* and *Lemmus* give evidence of close analogy to the fauna of Osztramos 3 in Hun-

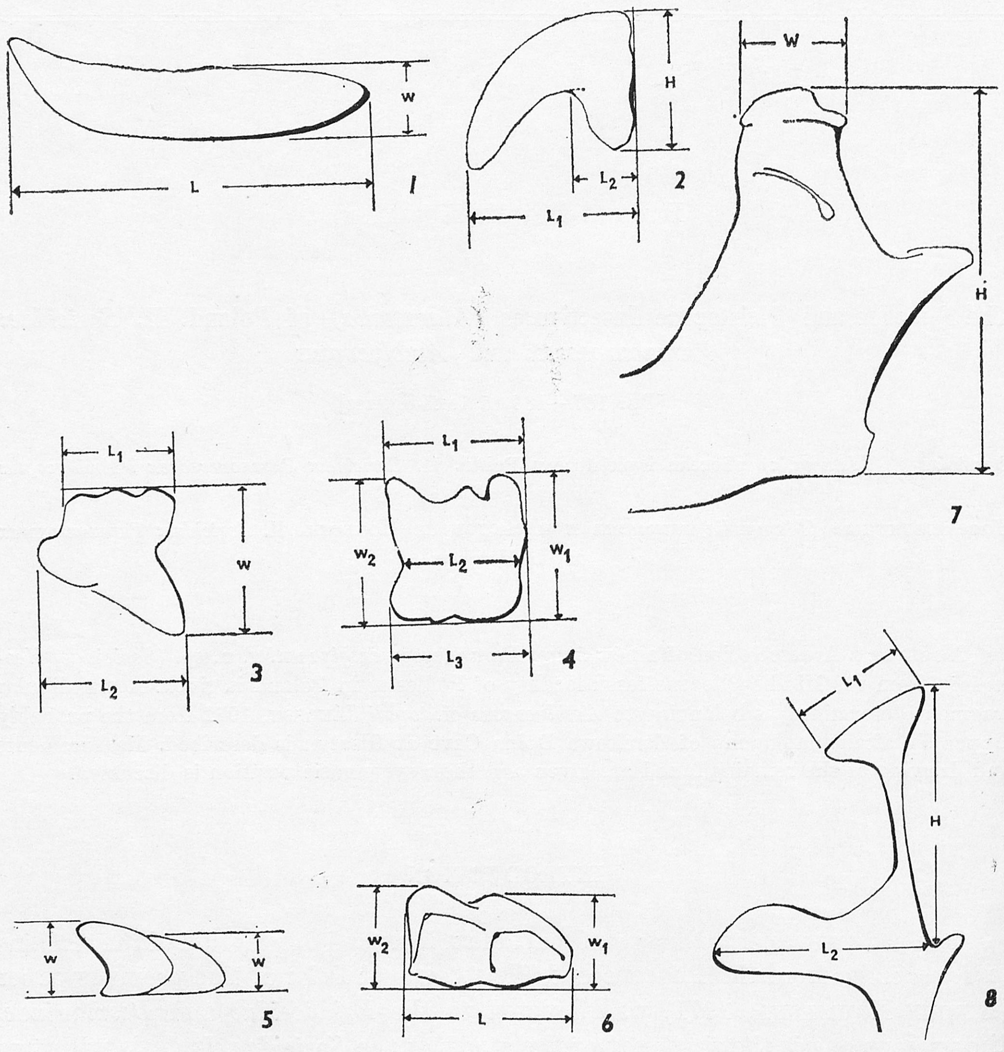


Fig. 1. The method of measuring of *Insectivora* teeth and mandibles. 1 — I_1, 2 — I^1, 3 — P^4, 4 — M^1, 5 — A-P_4, 6 — M_1 and M_2, 7 — ascending ramus and processus coronoideus, 8 — processus condyloideus

gary. It may well be that some forms (e. g. *Eomyidae*, *Baranomys*, *Mimomys gracilis*) derive from older sediments than does the main part of the fauna.

The fossil specimens described in this paper were directly compared with recent skulls of *Anourosorex squamipes* MILNE-EDWARDS, 1872 from the museums

of Leningrad, Moscow and Budapest, with remains of *Anourosorex japonicus* SHIKAMA and HASEGAWA, 1958 from the collection of the Institute of Systematic and Experimental Zoology in Cracow (N° MF/600) and with *Amblycoptus topali* JÁNOSSY, 1972 and *A. oligodon* KORMOS, 1926 from the National Museum in Budapest. The material described in this paper is preserved in the collection of the Institute of Systematic and Experimental Zoology in Cracow.

The measurements were taken according to the scheme presented in fig. 1, partly based on the work by H. de BRUIJN and C. G. RÜMKE (1974).

My thanks go to Dr. Gernod RABEDER from Vienna for his comments and data about Austrian remains of *Anourosorex* and to Dr. Oldřich FEJFAR from Prague for his valuable remarks. The figures were prepared by Mr. Krzysztof MALCZEWSKI.

SYSTEMATIC PART

Order *Insectivora* BOWDICH 1821
Family *Soricidae* GRAY, 1821
Subfamily *Soricinae* FISCHER von WALDHEIM, 1817
Tribe *Neomyini* REPENNING, 1967

Paranourosorex n. g.
Paranourosorex gigas n. g. n. sp.

(Text-figs 2—3)

Material. Podlesice. 2 left mandibular halves with complete dentition and processes other than processus angularis, 2 right mandibular halves with A_1*—M_1, one of them without processus angularis, one left fragment of mandible with I_1—M_1 without processes, one right detached I_1, one right maxillary fragment with P^4—M^1 and alveoles of two posterior antemolars and two posterior molars, one left maxillary fragment with P^4 and alveoles of I^1—A^3, one maxillary fragment with M^1 and broken P^4, two left and right detached M^1 and four (two right and two left) detached I^1, only two of them undamaged (MF/1345).

Holotype: left mandibular half with complete tooth-row and processes except for processus angularis (MF/1345/1).

Derivatio nominis: *Paranourosorex* — similar to *Anourosorex*, *gigas* — emphasizing its large dimensions.

Description. Dental formula

$$\frac{1-4-3}{1-2-3} = 28$$

* Antemolars.

Tops of some cusps and crests of teeth pigmented, the colour and range of pigmentation being different in particular specimens. In some specimens the teeth are brick-red, in others they are brownish yellow or there is no pigmentation at all. In the preserved part of the skull seen from a side there is a large round infraorbital foramen above the first root of P^4. Behind infraorbital foramen, at the level of its middle, is a small foramen lacrimale. It is situated exactly above the first root of M^1.

Upper teeth. I^1 is large, non-bifid, with a trace of the cingulum on its labial side. Unicuspids are not preserved in my material. The number and dimensions

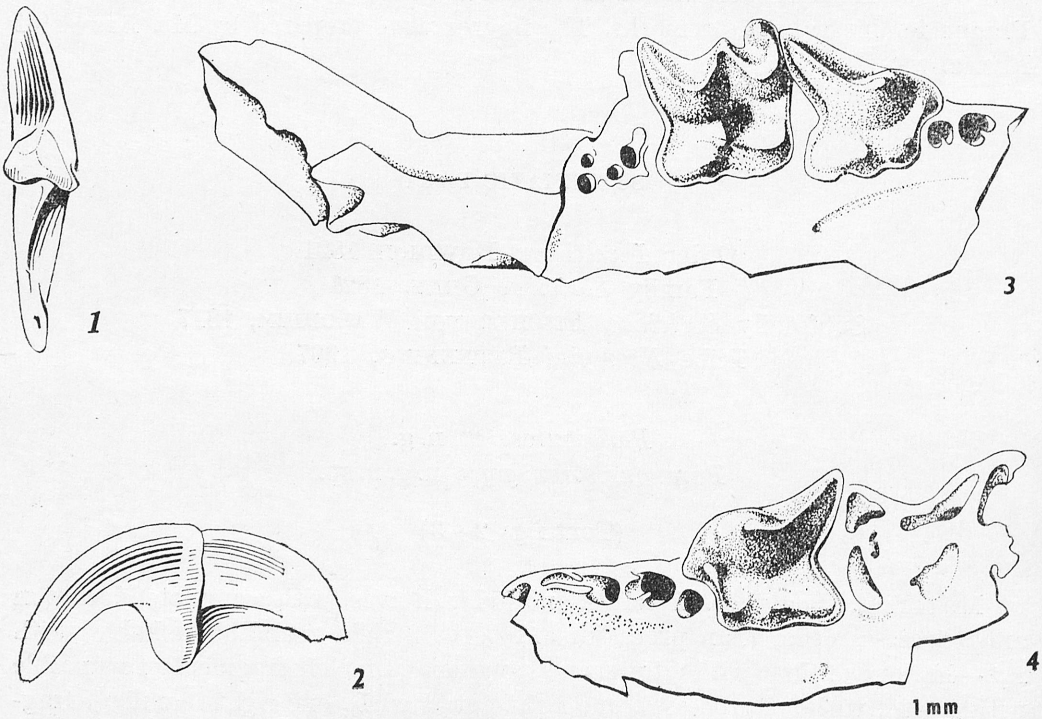


Fig. 2. *Paranourosorex gigas* n. g., n. sp. from Podlesice. 1—2 — left I^1, specimen no. MF/1345/12, 3 — right maxillary fragment with P^4 — M^1, specimen no MF/1345/7, 4 — left maxillary fragment with P^4, specimen np. MF/1345/8

of the alveoli testify that were three of them and their dimensions diminished gradually from the front towards the rear. The third and smallest unicuspid was probably invisible from the outside because, being displaced lingually, it was covered by the parastyle of P^4. Large molariform P^4 is characterized by its lingually shifted protocone and large parastyle, which is displaced anteriorly in relation to the protocone. As a result of these displacements the anterior and lingual sides form an obtuse angle and the tooth is trapezoidal. On the lingual and caudal side of P^4 is a distinct cingulum, especially well developed around its posterolingual angle. The cingulum is equally well developed on M^1. This

tooth is large, square in form, with a very large parastyle and accentuated metastyle. Between the protocone, metacone and hypocone of this tooth there is a small cusp, pyramidal in form. Both on P^4 and on M^1 posterior emargination conspicuous. M^1 and M^3 are not preserved in the material studied. The presence of M^3 is testified by the preserved alveoli. Their shape and dimensions suggest that M^2, much smaller than M^1, was probably trapezoidal and tiny two-rooted. M^3 triangular.

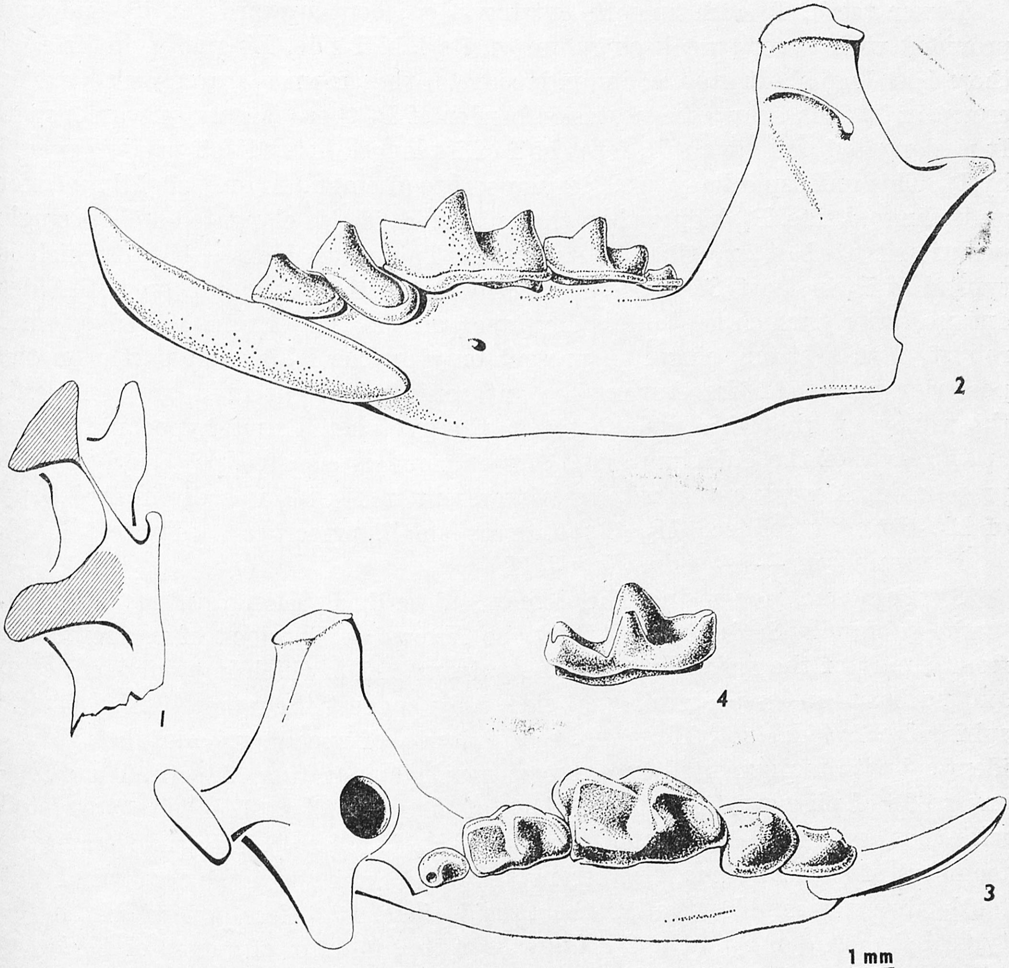


Fig. 3. *Paranourosorex gigas* n. g. n. sp. from Podlesice. 1 — processus condyloideus of right mandibular fragment, specimen no. MF/1345/4, 2—3 — left half of mandible with I_1 — M_3, holotype no. MF/1345/1, 4 — M_1, specimen no. MF/1345/1, lingually

Mandible. It is robust with the symphysis reaching as far as the middle of the first molar. The shorter and better developed upper crest of the symphysis protrudes further lingually than the longer but weaker lower crest. The single foramen mentale is situated between the roots of M_1, sometimes slightly shifted towards the posterior root. The horizontal and ascending mandibular rami form

a slightly obtuse angle. The broad upper part of the spatulate coronoid process forms an overhang externally. The fossa pterygoidea is very small and nearly rounded on the holotype, whereas on other specimens it is rather triangular in its upper part. Processus condyloideus of *Neomys*-type, i. e. with narrow interarticular surface. The upper articular facet on the condyle is small, more or less triangular, the lower one is large, kidney-shape and concave. Processus angularis is not preserved in my material.

Lower teeth. I_1 with smooth cutting edge, bent upwards at its end and provided with a very weak cingulum on its labial side. Lingually on its root there is a deep short groove; its extension on the crown is scarcely visible. The crown of I_1 ends below the posterior border of P_1 there is only one unicuspid. It is elongated and covers I_1, for a half of its length being itself partly covered by P_4. This unicuspid has a well developed broad cingulum only slightly weaker on its lingual side. P_4, higher than the unicuspid, is also elongated and its single peak is situated at one third of its length. This tooth lacks a basin, which is typical of P_4 in most *Soricinae*. It is provided with a cingulum on both sides and posteriorly which is also less developed on the lingual side. M_1 is large and robust, with a strong cingulum present only on the labial and partly on the posterior border of the crown. The entoconid and hypoconid are confluent, the valley on the labial side between the protoconid and hypoconid opens at the level of the cingulum and the metaconid is situated posteriorly to the protoconid. A weak entoconid crest is present in M_1. M_2 is a diminished copy of M_1. Strongly reduced M_3, though very small, preserves a minute talonid.

Dimensions — see table I and II.

Systematic position. The remains described belong, in my opinion, to the subfamily *Soricinae* and the tribe *Neomyini*. The lack of pigmentation from a part of the specimens and the pattern of P_4, which has only one cusp and no basin on its posterolingual side, may suggest their membership in the subfamily *Crocidurinae*. However, the majority of specimens, morphologically identical with unpigmented ones, have a marked coloration of teeth. The different grade of pigmentation and the lack of it are in all probabilities connected with the fossilisation. As to the structure of P_4, it has to be stressed that in the members of the *Soricinae* with strong jaws and large teeth the pattern of this tooth always resembles that in the *Crocidurinae*. It differs however from the typical structure of P_4 in the *Crocidurinae* in that in most of genera of *Soricinae* with strong jaws the labial cingulum overhangs the root and the labial wall of the mandible, and this is particularly so in the posterolabial part of the tooth. Such an overhanging cingulum is present also in *Paranourosorex* n. g. The morphology of the first lower molar, the form of the groove on the lingual side of the crown in I_1, the position of the foramen mentale and the other characters described above, also suggest the membership of *Paranourosorex* n. g. in the subfamily *Soricinae*. On the other hand, the structure of the processus condyloideus and of P^4 proves that it belongs to the tribe *Neomyini* REPENNING, 1967. Finally, the reduction of the posterior molars, nonbifid I^1 and strong

Table I

Paranourosorex gigas n. g. n. sp., Podlesice, dimensions of upper dentition

		MF/1345/7	MF/1345/8	MF/1345/9	MF/1345/10	MF/1345/11	MF/1345/12	MF/1345/13	MF/1345/14	MF/1345/15
I	L_1	—	—	—	—	—	3·49	3·41	—	—
	L_2	—	—	—	—	—	1·22	1·27	1·24	1·26
	W	—	—	—	—	—	3·03	3·03	3·04	3·02
P	L_1	3·08	3·10	—	—	—	—	—	—	—
	L_2	2·30	2·49	—	—	—	—	—	—	—
	W	3·16	3·06	—	—	—	—	—	—	—
M	L_1	2·95	—	3·21	3·10	3·16	—	—	—	—
	L_2	2·44	—	2·54	2·56	2·60	—	—	—	—
	L_3	2·71	—	2·74	2·80	2·83	—	—	—	—
	W_1	3·00	—	3·09	2·96	2·93	—	—	—	—
	W_2	2·77	—	2·70	2·82	2·80	—	—	—	—

Table II

Paranourosorex gigas n. g. n. sp., Podlesice, dimensions of mandibles and lower dentition

		MF/1345/1 (holotype)	MF/1345/2	MF/1345/3	MF/1345/4	MF/1345/5	MF/1345/6
I_1	L	7·59	7·20	—	—	—	7·65
	H	1·67	1·69	—	—	—	1·75
A	W	1·38	1·39	1·37	1·32	1·36	—
P_4	W	1·73	1·62	1·60	1·68	1·76	—
M_1	L	3·69	3·59	3·59	3·63	3·49	—
	W_1	1·90	1·88	1·91	1·86	1·82	—
	W_2	1·83	1·79	1·85	1·76	1·73	—
M_2	L	2·25	2·30	2·28	2·15	—	—
	W_1	1·38	1·33	1·32	1·34	—	—
	W_2	1·24	1·24	1·20	1·19	—	—
M_3	L	1·08	1·10	—	—	—	—
	W	0·75	0·76	—	—	—	—
Length of mandible with I_1		18·80	19·10	—	—	—	—
Length of mandible without I_1		15·70	15·90	—	15·50	—	—
Length of tooth-row with I_1		13·00	13·10	—	—	—	—
Length of tooth-tow without I_1		9·70	9·80	—	—	—	—
Length of M_1 — M_3		6·46	—	—	—	—	—
Height of ascending ramus		8·00	7·90	7·80	8·00	—	—
Width of proc. coronoideus		2·25	2·37	2·32	2·39	—	—
Heighth of mandible below M_1 (int.)		3·11	3·09	3·06	3·13	3·04	—
Length of upper articular facet		2·06	2·06	2·07	2·05	—	—
Length of lower articular facet		3·53	3·55	3·51	3·58	—	—
Heighth of proc. condyloideus		4·85	4·77	4·71	4·53	—	—

development of the parastyle of M^1 place the remains described in the group of species of this tribe belonging to the genera *Anourosorex* MILNE EDWARDS, 1872 and *Amblycoptus* KORMOS, 1926.

The comparison of *Paranourosorex gigas* n. g. n. sp. with the species of the genera *Amblycoptus*, *Anourosorex* and *Anourosoricodon*. *Amblycoptus* is a fossil genus with only two species known (*A. oligodon* KORMOS, 1926 and *A. topali* JÁNOSSY, 1972). In both of them the reduction of the molars went so far, that the third molar (or, according to KORMOS, 1926, the first one) is entirely lacking in both the maxilla and mandible. The dental formula of *Amblycoptus* is therefore:

$$\frac{1-4-2}{1-2-2} = 24$$

Paranourosorex gigas n. g. n. sp. has three upper and three lower molars and therefore it cannot belong to *Amblycoptus*.

Four species are hitherto known in the genus *Anourosorex*. These are: *A. squamipes* MILNE EDWARDS, 1872, living recently in mountain forests of South-East Asia (*A. assamensis* ANDERSSON, 1875 is generally recognized as a subspecies of *squamipes*), *A. inexpectatus* SCHLOSSER, 1924 described from the Middle-Pliocene of Ertemte in China, *A. japonicus* SHIKAMA and HASEGAWA, 1958 from the Upper Pleistocene of Japan and, finally, *A. kormosi* BACHMAYER and WILSON, 1970 from the Early Pliocene of Kohfidisch in Austria. In addition, RABEDER (1970) and DAXNER-HÖCK and RABEDER (1970) noted the presence of *Anourosorex* sp. in the Early Pliocene fauna of Eichkogel in Austria.

In 1966, TOPACHEVSKY described a mandibular fragment of a soricid from the Southern Ukraine as *Anourosoricodon pidoplitschkoi*, according to this author, closely related to *Anourosorex*. The same species was mentioned earlier as "*Anourosorex* sp." by TOPACHEVSKY (1962) and KONSTANTINOVA (1967). In 1965 TOPACHEVSKY published the name *Anourosoricodon pidoplitschkoi* as nomen nudum.

Anourosorex inexpectatus is known only from a toothless fragment of the posterior part of the mandible and therefore its relations to the recent and fossil species of *Anourosorex* cannot be determined. Two other fossil species of the genus have most of the typical features of the extant *A. squamipes*: I^1 non-bifid, P^4 molariform, M^1 with an unusually well developed parastyle and completely reduced mesostyle, reduced M_2 and M^3, I_1 with a smooth or only slightly irregular cutting edge, M_1 with a strongly elongated trigonid, its entoconid crest being very weak or lacking, entoconid not confluent with hypolophid and external valley between the protoconid and hypoconid very short, and reduced M_2 and M_3. The processus coronoideus and processus condyloideus are in both fossil and living species of *Anourosorex* of the same form. All these species, exception made for the oldest *A. kormosi*, have unpigmented teeth and their dental formula, if known, is the same as in *A. squamipes*, i. e.

$$\frac{1-3-3}{1-2-3} = 26$$

As can be seen from the description in this paper, *Paranourosorex gigas* n. g. n. sp. differs from *Anourosorex squamipes* in many characters. It has

a different dental formula, pigmentation of teeth, pattern of P^4, development of mesostyle on M^1, emargination of posterior basal outline on upper molariforms, presence of a cingulum on the lower teeth and entirely different morphology of P_4 and M_1.

The pattern of P_4 is especially important in this comparison. In *Paranourosorex* the structure of this tooth is of the type characteristic of the *Crocidurinae*. In *Anourosorex squamipes* this tooth has a posterolingual basin, i. e. has a form typical of the *Soricinae*. It has however to be mentioned that in *Anourosorex japonicus* and, as far as can be seen from the published pictures, in *A. kormosi*, P_4 was the *Crocidurinae* type. This proves that the *Crocidurinae* form of P_4 is not, as has hitherto been supposed, limited to the *Soricinae* with strong jaws and teeth.

The elongation of the trigonid on M_1, a character typical of the genera *Anourosorex* and *Amblycoptus*, is entirely absent from *Paranourosorex gigas* n. g. n. sp. The length ratio of trigonid to talonid in all species of *Anourosorex* and *Amblycoptus* is as 1·8—2·1, whereas in *Paranourosorex* it is always below 1·4.

As can be seen from Tables III and IV in the group of species under discussion

Table III

Dimensions of upper dentition in *Anourosorex* and *Paranourosorex*

		Paranourosorex gigas n. g. n. sp. Podlesice (average)	*Anourosorex japonicus* MF/600	*Anourosorex kormosi*, Kohfidisch (Bachmayer and Wilson, 1970)	*Anourosorex squamipes* (average of 2 spec. from Leningrad collection)
I_1	L_1	3·45	3·43	2·00	—
	L_2	1·25	1·51	—	—
	W	3·03	2·57	1·00	—
P_4	L_1	3·09	2·60	2·50—2·80	2·50
	L_2	2·39	2·45		
	W	3·11	3·08	2·30—2·50	2·70
M_1	L_1	3·10	2·51		
	L_2	2·53	2·41	2·20—2·30	2·60
	L_3	2·72	2·29		
	W_1	2·99	3·18	2·40—2·50	2·80
	W_2	2·77	2·33		

Paranourosorex gigas n. g. n. sp. is the largest, followed by *Anourosorex japonicus*, *A. squamipes* and *A. inexpectatus*, whereas *Anourosoricodon pidoplitschkoi* and *Anourosorex kormosi* are the smallest. Notwithstanding the large difference in dimensions the form from Podlesice is morphologically nearest *Anourosorex kormosi*. Both of them are characterized by the same dental formula, have a similar morphology of P_4, and strong emargination of the upper molariforms and both have a cingulum, pigmented teeth, a weak entoconid crest on M_1 and M_2, and so on. Another similar form is probably *Anourosorex* sp. from the Early Pliocene of Eichkogel in Austria. The description published so far is too laconic to state it with certainty. As to *Anourosoricodon pidoplitschkoi*, the material known so far is too fragmentary for detailed comparisons: only two mandibular fragments without processes were described, one toothless with the alveoli of M_1—M_3, the other one with I_1 and M_1. Topachevsky (1966) is of the opinion that his form belongs to the *Crocidurinae*, because it lacks pigmentation and has a groove extending to the crown on the lingual side of I_1. However, in some genera of the *Soricinae* pigmentation can be seen only in ultraviolet light or is entirely lacking, so that this character alone is not sufficient for determining the membership in one the subfamilies. On the other hand, the position of the foramen mentale and pattern of M_1 (metaconid shifted posteriorly in relation to protoconid, the breadth greater on the protoconid and metaconid than on the entoconid and hypoconid and, finally, the presence of an external valley between the protoconid and hypoconid, reaching deep in the direction of cingulum in *Anourosoricodon*) suggest that it may belong to the *Soricinae*, the more so, because it has some characters typical of the genera *Anourosorex* and *Amblycoptus*. Such characters are: the elongation of the trigonid on M_1 and the reduction of the last molars which can be seen from the preserved alveoli.

Notwithstanding the different grade of reduction of the last molars, *Paranourosorex* has also some characters in common with *Amblycoptus*. The most important of them is the presence of three upper unicuspids and their size and position. In both genera they diminish from the front towards the rear and the third unicuspid is minute, invisible from outside. Other characters they have in common are: the presence of emargination on the upper molariforms, the similar pattern of P_4 and the presence of a cingulum on the mandibular teeth. As was stated above, the form from Podlesice cannot belong to *Amblycoptus* because of the different pattern of M^1 and, above all, because of the presence of M_3.

Three characters are diagnostic for the genus *Anourosorex*: the reduction of the last molars, the peculiar structure of the first upper molar and the pattern of the first lower molar. The form from Podlesice has, it is true, a similar reduction of the molars and a similar, to some degree, structure of M^1, where the large parastyle is present, but is entirely different in the pattern of M_1. Besides, its dimensions are larger than those in all species of *Anourosorex* hitherto described, especially the species from approximately the same time and the neighbouring

territory. That is why the erection of a new genus seems to be justified.

The geologically oldest, Early Pliocene *Anourosorex kormosi* may be regarded as an ancestral form of the genera discussed above. It is rather small, has three unicuspids in the maxilla and three molars in both the upper and lower tooth-row $\left(\text{dental formula } \frac{1-4-3}{1-2-3} = 28\right)$. It displays a reduction in the last molars, on its M^1 the parastyle is well developed and the mesostyle reduced, the upper molariforms are emarginated, P^4 is the *Crocidurinae* type, pigmentation is weak, the trigonid on M_1 is elongated and the cingulum present on the lower teeth. From this stage, the evolution went in three different directions giving as a result the extant *Anourosorex* and the extinct genera *Amblycoptus* and *Paranourosorex*. *Amblycoptus* retained most of the ancestral characters, but the pigmentation of teeth was lost, the reduction of molars went so far that the third of them had disappeared in both tooth-rows and, finally, the size of the animal augmented slightly. More changes can be seen in two similar forms: *Anourosorex japonicus* and extant *A. squamipes*. They still have the diagnostic characters of *A. kormosi* (reduction of molars, pattern of M^1) but their size is much larger, the third maxillar unicuspid is lacking and so pigmentation as well as the emargination of upper molariforms and the cingulum of lower teeth. In *A. squamipes*, besides, the morphology of P_4 became typical of the *Soricinae*.

Still further reaching changes took place in *Paranourosorex*. The dimensions grew enormously, the pigmentation became accentuated, the pattern of P^4 and M^1 and, above all, of M_1, changed. As we have seen, in two other evolutionary lines the basic structure of these teeth remained unchanged. It may be presumed that the dental evolution of *Paranourosorex* was connected with a change in its diet.

Anourosorex inexpectatus, *A.* sp. from Eichkogel and *Anourosoricodon pidoplitschkoi* are too fragmentary known to be included in the above outline of evolution.

Amblycoptus Kormos, 1926
Amblycoptus cf. *topali* Jánossy, 1972
(text-figs 4—5)

Material. Zamkowa Dolna Cave at Olsztyn, layer C. Left mandibular fragment with M_1 and M_2 preserved (MF/1350).

Description. Teeth white, without any trace of pigmentation. M_1 elongated, with very long trigonid (length ratio of trigonid to talonid — 1·96), and narrow, as its paralophid and protolophid meet at an obtuse angle and metaconid is situated very close to the protoconid. Entoconid and hypolophid confluent, entoconid crest very weak, external valley between the protoconid and hypoconid shallow, very short and ending half-way up the crown without reaching the

Dimensions of mandibles and lower dentition in *Anourosorex*, *Amblycoptus*, *Paranourosorex* and *Anourosoricodon*

		Paranourosorex gigas n. g. n. sp. Podlesice (average)	*Anourosorex japonicus* MF/600	*Anourosorex squamipes*, average of 2 spec. from Leningrad collection	*Anourosorex kormosi* Kohfidisch (BACHMAYER, WILSON, 1970)	*Anourosoricodon pidoplitschkoi*, Ukraina (TOPACHEVSKY, 1966)	*Amblycoptus* cf. *topali* Zamkowa Dolna MF/1350	*Amblycoptus oligodon* Pólgardi (KORMOS, 1926)	*Amblycoptus oligodon* Pólgardi (JÁNOSSY, 1972)	*Amblycoptus topali*, Osztramos I (JÁNOSSY, 1972)
I_1	L	7·48	6·47	—	—	5·10	—	6·38	—	—
	H	1·70	1·62	—	—	1·30	—	1·24	—	—
A	W	1·36	—	—	1·00—1·20	—	—	—	—	—
P_4	W	1·68	1·55	—	1·20	—	—	—	—	—
M_1	L	3·60	3·34	3·00	2·50—2·60	2·60	3·14	3·33	2·80	3·22
	W_1	1·87	1·63	1·40	1·40—1·50	1·40	1·43	—	1·56	1·51
	W_2	1·79	1·49			1·30	1·31	—		
M_2	L	2·29	2·07	2·00	1·80	—	1·74	1·90	1·80	1·65
	W_1	1·34	1·16	1·10	1·10—1·20	—	0·85	—	1·05	0·94
	W_2	1·22	0·91			—	0·81	—		
M_3	L	1·09	—	0·90	1·00—1·10	—	—	—	—	—
	W	0·75	—	0·70	0·60	—	—	—	—	—
Length of mandible with I_1		18·90	—	17·00	—	—	—	15·90	—	—
Length of mandible without I_1		15·70	—	14·70	—	—	—	—	—	—
Length of tooth-row with I_1		13·00	—	10·70	—	—	—	10·09	—	—
Length of tooth-row without I_1		9·70	—	7·80	—	—	—	—	—	—
Length of M_1 — M_3		6·46	—	5·70	500·—5·10	—	—	—	—	—
Height of ascending ramus		7·90	6·40	7·00	—	—	—	7·80	—	—
Width of proc. coronoideus		2·33	2·35	—	—	—	—	2·76	—	—
Height of mandible below M_1 (int.)		3·09	2·89	2·50[1]	2·40—2·60	2·00—2·20	—	3·30[2]	—	—
Length of upper articular facet		2·06	1·88	—	—	—	—	—	—	—
Length of lower articular facet		3·54	3·32	—	—	—	—	—	—	—
Height of proc. condyloideus		4·71	4·29	—	—	—	—	—	—	—
Ratio of trigonid to talonid length		1·35	1·85	—	—	—	1·96	—	—	—

[1] behind M_1
[2] below M_2

cingulum. The cingulum very well developed on the labial side, is broadest below the protoconid. M_2 is a diminished copy of M_1. M_3 is absent.

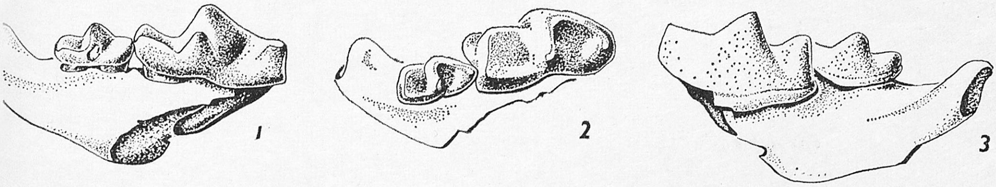


Fig. 4. *Amblycoptus* cf. *topali* from Zamkowa Dolna Cave. 1—3 — left mandibular fragment with M_1 — M_2, specimen no. MF/1350/1

Dimensions, see table V.

Table V

Amblycoptus cf. *topali* JÁNOSSY, Zamkowa Dolna Cave, layer C (MF/1350) dimension of lower dentition

M_1	L	3·14
	W_1	1·43
	W_2	1·31
M_2	L	1·74
	W_1	0·85
	W_2	0·81

Systematic remarks. The form of the teeth, particularily of M_1, and the absence of M_3 indicate that this specimen belongs to the genus *Amblycoptus*. The proportions of M_1 and the dimensions of both molars (see fig. 5) point to the species *A. topali*. As has been stated above, two species were hitherto described in this genus, both from Hungary: *A. oligodon* KORMOS, 1926 from the Early Pliocene of Polgardi and *A. topali* JÁNOSSY, 1972 from the Middle Pliocene locality Osztramos-1. According to JÁNOSSY (1972), *A. topali* differs from *A. oligodon* mainly in the proportions and dimensions of M_1 and in a greater reduction of both the first lower antemolar and second lower molar. The dimensions of both molars of the specimen from Zamkowa Dolna are within the range of variability of *A. topali* and outside the range of *A. oligodon* (Table III—IV and fig. 5). Incomplete material does not permit us to determine the specimens definitively.

In any way, the specimen of *Amblycoptus* from Zamkowa Dolna is the first of this genus found outside Hungary. At the moment it is impossible to decide

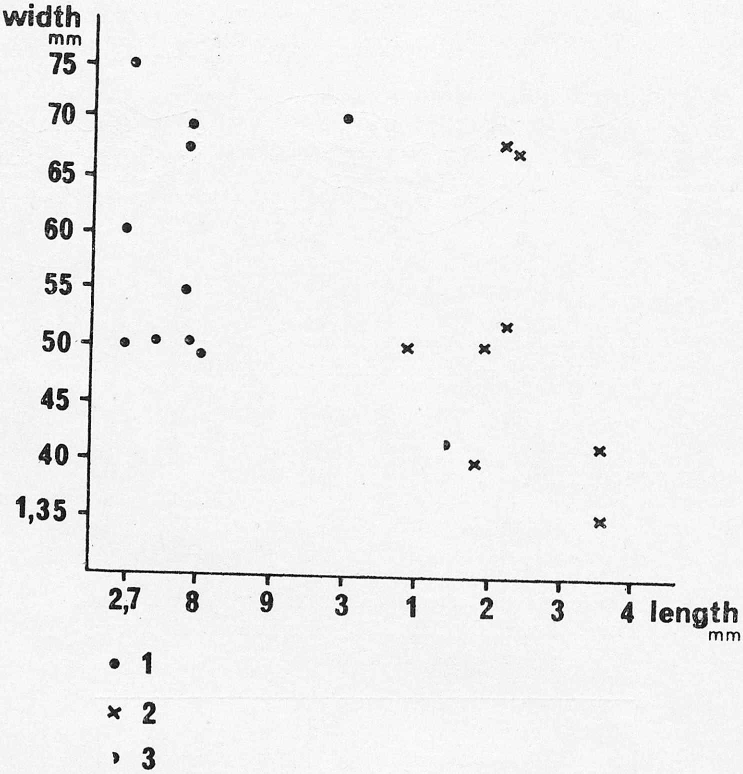


Fig. 5. Scatter-diagram showing length and width of M_1 in *Amblycoptus* (after JÁNOSSY 1972). 1 — *Amblycoptus oligodon* KORMOS, Polgardi, 2 — A. *topali* JÁNOSSY, Osztramos loc. 1, 3— *A.* cf. *topali*, Zamkowa Dolna Cave

whether it is contemporaneous with the main fauna from Zamkowa Dolna Cave which is the Upper Villafranchian age or whether it represents an older element.

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STRESZCZENIE

Praca jest drugą częścią zamierzonego opracowania całości szczątków *Insectivora* z pliocenu i plejstocenu Polski, a zarazem pierwszą częścią opracowania rodziny *Soricidae*. Zawiera opis nowego rodzaju i gatunku *Paranourosorex gigas* n. g. n. sp. (*Soricinae, Neomyini*) z środkowoplioceńskiego stanowiska w Podlesicach k. Kroczyc (skład fauny tego stanowiska podają prace: KOWALSKI 1956, 1963, RZEBIK-KOWALSKA 1971) oraz opis bliskiego mu systematycznie *Amblycoptus* cf. *topali* JÁNOSSY, 1972 z jaskini Zamkowej Dolnej w Olsztynie k. Częstochowy.

Szczątki z Podlesic przez silną redukcję ostatnich molarów, nierozdwojony I^1 i przerost parastylu na M^1 zbliżają się budową do grupy gatunków z rodzajów *Anourosorex* i *Amblycoptus*. Jednak różny stopień redukcji molarów, częściowo

inna budowa M^1, całkowicie inna M_1, oraz bardzo duże rozmiary, nie spotykane u pozostałych gatunków obu rodzajów, powodują, że utworzono dla nich nowy rodzaj i nowy gatunek.

Porównanie *Paranourosorex gigas* n. g. n. sp. z gatunkami rodzajów *Anourosorex* i *Amblycoptus* wykazało, że najbliższy mu morfologicznie, chociaż dużo mniejszy jest *Anourosorex kormosi* z wczesnoplioceńskiego stanowiska Kohfidisch w Austrii, który mógłby być ewentualnie przodkiem pozostałych gatunków z rodzajów *Anourosorex* i *Amblycoptus* oraz rodzaju *Paranourosorex*. Morfologia i wymiary żuchwy z jaskini Zamkowej Dolnej wskazują na przynależność jej do *Amblycoptus* cf. *topali*, chociaż bardzo skąpy materiał nie pozwala na definitywne oznaczenie. Jest to jednak pierwsze jak dotąd znalezisko tego wyłącznie kopalnego rodzaju poza obszarem Węgier. Wiek tego nie opracowanego jeszcze całkowicie stanowiska datowano wstępnie na środkowy Wilafransz, ale nie można wykluczyć w nim domieszki elementów starszych.

РЕЗЮМЕ

Работа является второй частью задуманной работы по целостности останков *Insectivora* из плиоцена и плейстоцена Польши и одновременно первой частью разработки семейства *Soricidae*. Работа содержит описание нового рода и вида *Paranourosorex gigas* n. g. n. sp. (*Soricinae*, *Neomyini*) из среднеплиоценского стационного положения в Подлесицах около Крочиц (состав фауны этой стации представлен в работах: Ковальски 1956, 1963, Жебик-Ковальска 1971), а также описание систематически близкого ему *Amblycoptus* cf. *topali* JÁNOSSY, 1972 из пещеры Замкова Дольна в Ольштыне ок. Ченстоховы.

Останки из Подлесиц сильной редукцией последних моляров, нераздвоенным I^1 и гипертрофией парастиля на M^1 приближаются строением к группе видов из родов *Anourosorex* и *Amblycoptus*. Однако различная степень редукции моляров, частично другое строение M^1, совсем иное строение M_1, а также очень большие размеры, не встречающиеся у остальных видов обоих родов вызвали образование для них нового рода и нового вида.

Сравнение *Paranourosorex gigas* n. g. n. sp. из видами родов *Anourosorex* и *Amblycoptus* обнаружило, что наиболее близкий ему морфологически, хотя значительно меньший является *Anourosorex kormosi* из раннеплиоценской стации Кохфидиш в Австрии, который мог бы, вероятно, быть предком остальных видов из родов *Anourosorex* и *Amblycoptus*, а также рода *Paranourosorex*. Морфология и размеры нижней челюсти из пещеры Замкова Дольна указывают, что она принадлежит к *Amblycoptus* cf. *topali*, но очень скудный материал не позволяет на решающее определение. Это первая находка этого исключительно ископаемого рода за территорией Венгрии. Возраст этой, ещё вполне не разработанной стации, датируется на средний Виллафранш, но нельзя исключить из него примеси более древних элементов.

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